

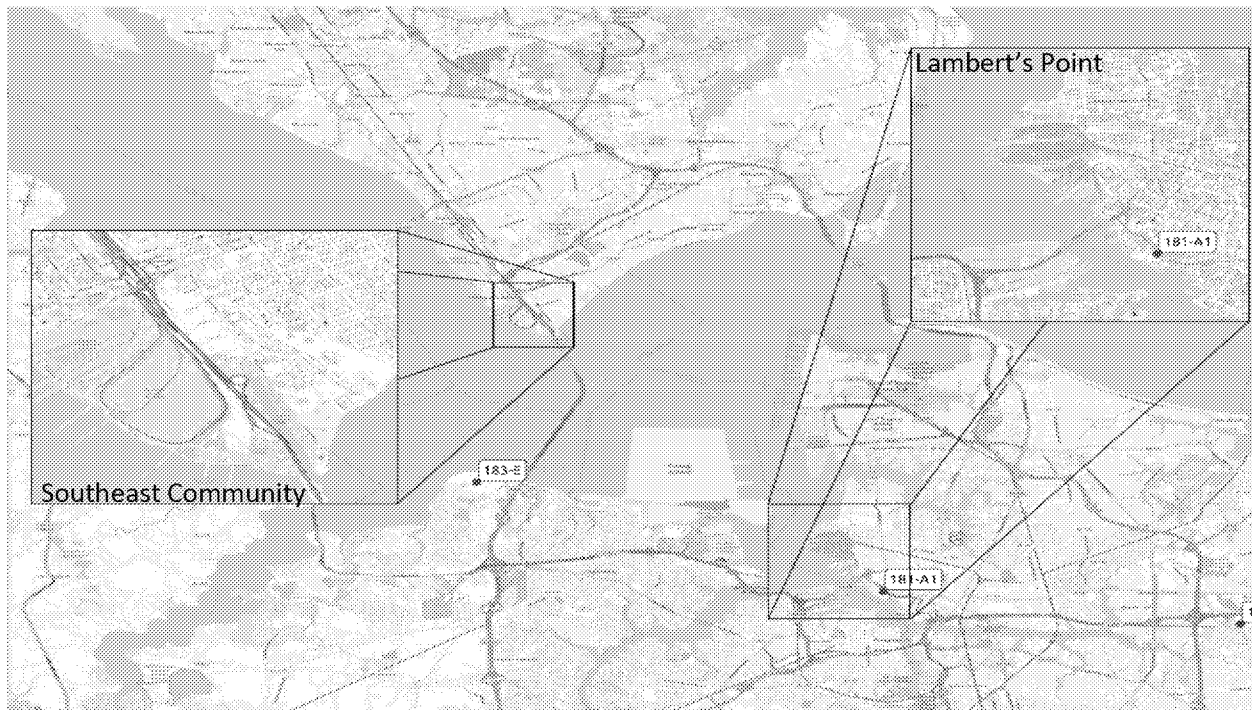
**A. Summary Information**

- i. Project Title: Characterization and Risk Assessment of Air Toxics Metals in Southeast Virginia
- ii. Applicant Information: Virginia Department of Environmental Quality  
  
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- iii. Funding Requested: **\$658,251.00**
- iv. Total Project Cost: \$696,251.00
- v. Project Period: 3 years from Date of award
- vi. DUNS Number: 8097437680000

**B. Project Summary/Approach**

Virginia Department of Environmental Quality (DEQ) Office of Air Quality Monitoring (OAQM) is proposing a Community Scale Air Toxics Monitoring project for the Southeastern (Tidewater) Area of the Commonwealth of Virginia. This project is intended to characterize the ambient concentrations of air toxics metals and perform corresponding air quality and health risk assessments for two Tidewater communities: the Lambert's Point Community (LP) and Southeast community (SE) located in Norfolk and Newport News, respectively. Residents of these communities have long expressed concern about ambient coal dust and air quality [1]. Coal dust is known to contain metals, some of which may be present in toxic amounts. This project is designed to develop a local air quality characterization in these communities and perform an air quality and a health risk assessment for air toxics metals. The results of this characterization and the air quality and health assessments will inform future DEQ Strategic Plan objectives to improve air quality and community engagement in underserved communities.

Figure 1. Map of Southeast Virginia with LP and SE community Map insets



The right inset Figure 1 shows the LP community, which includes the Norfolk Southern Railroad Yard. Historically, the rail yard and LP have been a transport area for rail cars shipping coal to international

destinations. The first arrival of coal rail cars is documented in 1885. Shortly after this, the area began to develop as neighborhoods for the rail yard workers and their families. By the early nineteen hundreds, as the coal industry grew, the transporting facilities at LP were shipping more than two million tons of coal a year. In 1961, Norfolk Southern increased the capacity to 48 million tons a year. This increased capacity was implemented prior to the Clean Air Act (1970). Due to the history of coal-related rail services, the community has had concerns regarding the possible impacts to air quality and health effects on community members from the transport of coal [2, 3].

The left inset of Figure 1 shows the SE community of Newport News. Because of its location, there is a long history of shipbuilding and maritime commerce. Industrialization in this area dates to 1880 with the establishment of the Old Dominion Land Company. In 2011, through a grant with the USEPA, the Southeast Community Action for a Renewed Environment Coalition (CARE) was established to promote community participation in addressing environmental concerns [4].

The 2014 National Air Toxics Assessment (NATA) modeled national cancer risk summary indicates that both the Newport News and Norfolk regions have an average cancer risk of approximately 30 in a million due to Hazardous Air Pollutants (HAPs). For these areas, approximately 10% of the cancer risk is from the non-point and non-road category, which includes the non-point industrial category of fugitive coal dust. The NATA model shows risk estimates for some metals such as nickel, cadmium, arsenic and hexavalent chromium compounds. This NATA modeling assumes nickel is representative of air toxics metals. The Air Monitoring Network for Virginia has only one metals monitoring site in the Tidewater area, which is in Virginia Beach (51-810-0008). This site has a long-term dataset available and the ambient data from this site shows that the annual average arsenic concentrations are above the one in a million risk level. Additional ambient air monitoring data are needed to characterize the impacts of coal dust on the LP and SE communities.

In 2011, EPA designated the SE community as a "Making a Visible Difference" (MVD) community and conducted an environmental assessment [5]. This assessment investigated many sources of pollution and the health effects on the community and provided a platform for the community to address these concerns. In 2015, due to citizen complaints Norfolk Southern Railway Company (NS), and Simpson Weather Associates, conducted a study to determine the amount of PM10 ambient air pollution. The results of this study indicated that the PM10 ambient levels did not exceed the NAAQS [6]. Due to the known presence of metals in coal dust, an assessment of the ambient air metal concentrations is needed to examine the possible health effects from coal dust in this community. Additionally, the demographic data for both study areas suggest that these communities may have been disproportionately burdened by some environmental risks. Significant minority populations characterize both communities, and considerable portions of the populations are below the federal poverty level.

A peer-reviewed research study of cancer rates in the Appalachian region of WV and Southwest VA, where mountaintop coal mining is prevalent, found significantly higher cancer rates in areas adjacent to coal mines as compared to similar areas not near coal mines [7]. A recent study in the Norfolk area conducted by Old Dominion University and Tulane University studied the arsenic levels in topsoil near the LP community; this study found that the As levels ranged from 2 to 20 times greater than background levels [8]. This study suggests that the coal transportation operations contribute to high arsenic levels in the soil, and further research is necessary to determine the health effects on these communities.

The primary objectives of this study are as follows:

- (i) Collect data on PM10, and ambient air toxics metals in the LP and SE communities with a network of FRM/FEM PM10 and TSP samplers along with air quality sensors;
- (ii) Characterize the spatial distribution of PM10 and air toxics metals in the LP and SE communities;
- (iii) Evaluate the health risks posed by the toxic metals in ambient air;
- (iv) Build the communities' capability to use the sensor network data and FEM-based data for ongoing community issues.

This study will comprise five distinct phases:

- (1) Planning and siting of the samplers,
- (2) Collection and chemical analysis of ambient air metals samples,
- (3) Data validation and results summaries,
- (4) Health risk assessments, and
- (5) A final report incorporating recommendations for further actions and study.

### **Phase 1: Planning and Siting Samplers**

The first phase, planning and siting of samplers, will include two separate segments, one for the FRM PM10 and TSP samplers, and one for the FEM continuous PM10 monitors. During this phase, five FRM PM10 samplers and two TSP samplers will be sited within both study areas (LP and SE). There will be one PM10 sampler sited upwind of operations, and four sited within the communities. Additionally, there will be two TSP samplers collocated with PM10 samplers within the communities. The TSP samplers are collocated to capture any possible fugitive emissions of metals into the ambient air due to traffic, construction activities, etc. Additionally, ambient sensors will also be collocated with the PM10/TSP samplers. The intention is to develop a relationship between the PM10/TSP metals results and the sensor data so that the communities can continue citizen monitoring using sensors data after the study is completed. Additionally, one continuous FEM PM10 monitor (Teledyne T640X) will be sited in each study area; these monitors are intended to become a part of Virginia's Air Monitoring Network once this study is completed. The siting plan for these two study areas will include the following information: historical meteorological data, geography, and any other relevant data associated with past modeling studies. During this first phase of the project, the FRM PM10 and TSP samplers, the air sensors, and the continuous FEM PM10 monitors will be purchased.

### **Phase 2: Collection and Chemical Analysis**

The second phase of the study will be collection of ambient air samples, and chemical analysis of these samples. The PM10 and TSP samplers will be operated in accordance with DEQ's Quality Assurance Project Plans (QAPPs) and Standard Operating Procedures (SOPs) designed and approved for current programs. Therefore, these samples will be collected in such a manner that all EPA quality control and quality assurance requirements are maintained, including Chain of Custody. The samples will be collected on the EPA 1-in-6-day schedule for two years (the continuous FEM PM10 monitors will collect data for a year and a half). Once the samples have been collected, they will be sent to the Division of Consolidated Laboratory Services (DCLS), a division of the Department of General Services of the Commonwealth of Virginia. DCLS will perform the chemical analysis for each sample and provide these results to DEQ's OAQM. DCLS will conduct analyses for antimony, arsenic, beryllium, cadmium, total chromium, cobalt, lead, manganese, nickel, and selenium. In addition DEQ will perform microscopic analysis based on the results for both PM10/TSP loading and the analytical results from DCLS.

### **Phase 3: Validate and Summarize Data**

The third phase of this project addresses the data validation and will be conducted by OAQM. This phase will begin concurrently with the sample collection phase. Like the sample collection phase, this phase will be conducted in accordance with OAQM's QAPPs and SOPs for PM10 and TSP metals. During this phase OAQM will be developing correlations among the Toxics metals, the TSP/PM10 sampler data and the continuous FEM PM10 data. Additionally, during this phase, the data from the sensors will be examined to determine if a relationship exists that can provide some indication of toxic metal concentrations.

### **Phase 4: Perform a Health Risk Assessment**

During the fourth phase, VDH will perform the Health Risk Assessments with validated data provided by DEQ. A summary of the validated data will be sent to the Office of Environmental Health Services at the Virginia Department of Health (VDH) who will conduct the health risk assessment.

### **Phase 5: Final Report and Evaluation**

During the fifth phase of the project, the Final Data Report and the Final Evaluation Report will be developed and shared with community stakeholders. Using health assessment results and spatial metals

concentrations DEQ will evaluate and report the impact of the study on existing programs and suggest future studies and actions that address the study's findings.

In summary, the total length of time for this project will be three years. Table 2 summarizes the expected timeframe for each phase of this project. The work products to be developed include an analysis of the spatial concentration variation of toxic metals within each community, a database of toxic metals results applicable to each community, health risk assessment evaluations, and a method for comparison of the sensor PM10 data with the continuous FEM data to provide the community with air quality information once the project is completed. This project will provide benefits to both the LP and SE communities and aid the Commonwealth in identifying any health risks associated with metals exposure from coal dust in these communities. Using health risk assessments and the spatial metals variation information, specific plans and programs can be developed to address the health consequences of the community-level ambient air pollution.

OAQM will coordinate with the DEQ Communications Department to identify community organizations to be included in this project's stakeholder process. Through this collaboration, DEQ will participate in community outreach programs to provide project updates and enhance understanding of air quality and public health, with emphasis being placed on building local organizational capacity to educate community members. DEQ will continue to identify community stakeholders throughout the length of the project to increase participation in the stakeholder process.

During the implementation of this project, the DEQ plans to collaborate with several organizations, including other state agencies, academia, and community groups. The collection of raw data, which includes a siting plan, deployment of samplers, collection of samples, and analysis of the raw data will be conducted by the OAQM with assistance from community groups and the local academia. The analytical procedures used to determine the metals concentrations of the collected samples will be performed by DCLS, which is an accredited laboratory for environmental analysis (NELAC certification through New Jersey, Laboratory Certification ID VA010). Once all the results have been validated, the data will be analyzed by the VDH Office of Environmental Health Services to develop a health risk assessment for these two communities. The final stage of this project will be presenting the stakeholders, LP and SE communities, with the health risk assessments through a community-engagement platform. At this time, all community concerns regarding the environmental results of this project can be addressed.

The DEQ is responsible for implementing all air quality monitoring programs within the Commonwealth of Virginia. Within the OAQM, the Air Toxics and Special Projects Team and the Data Quality Team have extensive experience with toxics metals sampling through the National Air Toxics Trend Sites (NATTS) and Urban Air Toxics Program (UATM) and through previous Community Air Toxics grant funded projects. Prior Community Scale projects include the Winchester, VA study that investigated the effect of industrial and commercial operations on the downwind concentrations of metal air toxics, and the Hopewell study in which the results were used to create a Risk Assessment that identified the contribution to both the estimated cancer and non-cancer respiratory risks of multiple toxics compounds, including toxics metals.

Since 2008, OAQM has operated and maintained the NATTS site in Eastern Henrico County, VA. The suite of pollutants includes toxics metals; in this program, OAQM is responsible for weighing filters, sampling ambient air, transmitting exposed samples to the laboratory, and evaluating analytical results. DCLS performs the chemical analysis of the samples and provides documentation of results to OAQM. Both OAQM and DCLS have continuously demonstrated proficiency in all areas of sample collection, sample analysis, and data evaluation as demonstrated by multiple Technical Systems Audits (TSA) and performance in the proficiency testing evaluation of DCLS, specifically the 4th quarter 2019 Metals PT results dated February 2, 2020. In addition, OAQM has an experienced microscopist on staff.

DEQ will use regional resources to prepare samplers, set the time of sampling runs, and retrieve exposed filters. The Tidewater Regional Office (TRO) currently manages an intern program established through the MOU with EPA Region III dated October 19, 2019. DEQ plans to leverage this existing intern program to increase regional resources for performing the day-to-day operation of the samplers. DCLS has performed all analytical work for past toxics projects and supports the existing DEQ toxics programs.

OAQM also plans to utilize the established network of contacts for both Southeast CARE and the Lamberts Point Civic Association. For example, Southeast CARE collaborates with ODU, who has been involved with earlier studies in the SE community and has experience with understanding the community and their health concerns.

Both the LP and SE communities have expressed concerns with respect to the potential impact of fugitive coal emissions on the health of their residents. DEQ has been responsive to these local groups but due to financial constraints no additional monitoring beyond the NS study has taken place. DEQ has already approached both the Southeast Care Coalition and the Lambert's Point Civic Association, and both organizations are eager to work with DEQ on this study. Both these organizations, and other interested parties, will benefit from having data that address the community concerns using EPA approved methodologies, and the data evaluated from a public health perspective for potential exposures. Table 1 outlines the expected outcomes and benefits from this project. The ongoing measurement of air quality will keep both DEQ and the civic organizations engaged and will provide a basis for future community interactions.

### C. Environmental Results

Table 1: Outcomes, Outputs, and Performance Measures

| Outputs  | Outcomes   | Performance Measures   |
|--|--|--|
| Database of air toxics metals data useful for both the communities and future EPA modeling efforts such as NATA        | Toxic metals results provided to the AQS database                                | QA results from the sampler operations and data capture  |
| Quarterly progress reports for the stakeholders  | Possible FRM sampler siting, and continuous PM10 monitor siting (T640X)          | Routine QA from laboratory operations  |
| Health risk assessment evaluations   | Increased and improved community awareness                                       | Measure for increased community awareness: Google Analytics—retention, average session length, percent of user generated content, number of posts reported as inappropriate, DEQ response rate |
| Final data report, to include spatial concentration variation of metals in the two study areas                         | Increased community understanding of the health risks                            | 100% of progress reports completed on time   |
| Final project report, to include an analysis of possible relationships between the FEM/FRM metals data and sensor data | The continuous PM10 results will be posted on the DEQ website for public viewing | Minimally Semi-annual meetings with the LP and SE communities throughout the project.  |

### D. Programmatic Capability and Past Performance (20 points)

#### Winchester Air Toxics Study

In 2004, to respond to citizens' health concerns about possible unusual cancer rates compared to surrounding localities, DEQ applied for a special grant to establish and operate a comprehensive Air Toxics monitoring network in the Winchester area. The project enabled DEQ to perform ambient air sampling in the target area to determine possible unusual concentrations of toxic compounds. In order to characterize the air quality and health aspect of selected ambient air toxic pollutants (HAPs) in Winchester City and Frederick County, this project had the following objectives:

- To establish a possible correlation between cancer rates and averages with target compound concentrations;
- To develop a baseline of air quality concentrations for the area that could be used for future evaluation of the progress of an emission control program; and
- To assess the validity of the 1999 National Air Toxic Assessment (NATA) findings.

The sampling activities from the air toxics monitoring were conducted from January 2005 to June 2006 in Winchester, and the data analyses were performed by DEQ's Valley Regional Office and OAQM. DEQ sampled hazardous air pollutants in Winchester City and Frederick County at three sites: the General Electric Plant, the Winchester Court House, and the Clearbrook Fire Station. The analyses indicated that the pollutants in these air samples were not significantly different from other monitored locations in VA. The Data Report was provided to the VDH Lord Fairfax Health District to perform the health assessment. The study also established a baseline of air quality concentrations in Winchester, which will be useful for future evaluations, and allowed DEQ to evaluate the results of the 1999 NATA modeling estimates.

The study included a requirement for a minimum of one year of sample collection which met data capture requirements. The sampling began in January 2005 and was completed in June 2006. The final Data Report was completed in October 2006. All data received during this study were validated within EPA mandated time frames, and all quarterly data met data capture requirements.

### **Hopewell Study**

In 2006, DEQ applied for and received a grant to establish and operate a comprehensive Air Toxics monitoring project in the Hopewell area. The project enabled DEQ to perform ambient air monitoring in the Hopewell area for a limited number of air pollutants classified as toxic air pollutants in the Virginia Air Quality Regulations. The collected data and subsequent data review were provided to the DEQ Risk Assessment Office to perform the Risk Assessment of the collected data. The Final Risk Assessment report was completed and presented to the public in fall 2010.

In order to characterize the air quality and health aspects of selected ambient air toxic pollutants in the City of Hopewell, the project was designed to address the following objectives:

- To establish a baseline for ambient air exposure of hazardous volatile organics in this community and help to identify the potential existence of "hot spots".
- To provide information that will assist in the development of the residual risk standards since most of the sources involved were covered by at least one Maximum Achievable Control Technology (MACT) standard.
- To characterize main pollutants by determining spatial concentration patterns and the major source of the pollutants in the Hopewell/Colonial Heights area that could be used to evaluate future emission control programs.
- To assess the validity of the National Air Toxics Assessment (NATA) findings.

The Risk Assessment Report was modeled after the National Academy of Sciences Risk Assessment Paradigm which was built using the following four steps:

- Data collection and evaluation (including risk-based screening).
- Exposure Assessment
- Toxicity Assessment (including hazard identification and dose-response assessment)
- Risk Characterization (including uncertainty analysis)

The Hopewell study collected data from December 2006 to September of 2008. All monitoring sites met the data capture requirements and the Final Data report was submitted in February of 2009. A stakeholders meeting, along with a public meeting, was conducted on March 25, 2009 to explain the results. The final risk assessment report was submitted to EPA in October 2010.

In Summary, DEQ OAQM has successfully applied for, executed and reported on two separate Air Toxics monitoring projects as described above. Additionally, we have extensive experience in operating air toxics

programs such as NATTS and UATM. This project will complement our current programs and add to our database of air toxics in Virginia.

## E. Budget

**\$658,255.51**

The followings are details of the funding request for the proposed projects:

### Construction and Set-up Costs

|   |                    |
|---|--------------------|
| 2 Trailer Repair and Preparation (\$3500 ea. to support the T640's) | \$7,000.00         |
| 16 Power installations (Where necessary @ \$2,000.00 ea.)           | \$32,000.00        |
| Miscellaneous (fencing, ground preparation, etc.)                   | \$7,500.00         |
| <b>Total</b>  | <b>\$46,500.00</b> |

### Equipment

|   |                     |
|---|---------------------|
| Ten PM10 samplers (\$8600 ea.)                        | \$86,000.00         |
| 4 TSP samplers (\$5000 ea.)                           | \$20,000.00         |
| 2 T640X PM10/PM2.5 continuous samplers (\$37,000 ea.) | \$74,000.00         |
| 2 8872 data loggers (\$8400 each)                     | \$16,800.00         |
| Sensor budget (approx. 10 at no more than \$3000 ea.) | \$30,000.00         |
| Microscopic Upgrade                                   | \$10,000.00         |
| <b>Total</b>  | <b>\$236,800.00</b> |

### Supply

|   |                    |
|---|--------------------|
| 4 back up digital timers (\$800 ea.)                  | \$3,200.00         |
| 14 Router/Modems (\$950)                              | \$13,300.00        |
| Calibration/Audit supplies (T640)                     | \$1,000.00         |
| 4 Flow Check Verification Hardware (\$1635 ea.)       | \$6,540.00         |
| Field Temperature and measurement Hardware            | \$950.00           |
| Filters (\$1880 per box)                              | \$39,480.00        |
| PM10/TSP motors (\$140 ea.)                           | \$1,400.00         |
| Cabling, brushes, electrical supplies                 | \$1,000.00         |
| Assorted supplies - Gloves, tools lawn products, etc. | \$900.00           |
| <b>Total</b>  | <b>\$67,770.00</b> |

### Contractual

|                                  |                     |
|----------------------------------|---------------------|
| Electrical Operating Costs Total | \$2,000.00          |
| Sample Analysis Costs            | \$170,755.20        |
| DCLS Lab Support help            | \$23,850.00         |
| VDH Health Assessment Support    | \$10,807.00         |
| <b>Total</b>                     | <b>\$207,412.46</b> |

### Other Expenditures

|   |                    |
|---|--------------------|
| Public Meetings (12 meetings @ \$100 rental)          | \$1,200.00         |
| Printed materials for meetings                        | \$2,000.00         |
| Publication and distribution of quarterly information | \$500.00           |
| Property rental for monitor siting                    | \$4,800.00         |
| Local approvals and zoning compliance reviews         | \$500.00           |
| Site improvements                                     | \$3,200.00         |
| Utility Connections                                   | \$4,600.00         |
| Monthly Cell Charges                                  | \$4,600.00         |
| Postage/courier                                       | \$1,050.00         |
| <b>Total</b>  | <b>\$22,450.00</b> |

### Travel – All travel in-state

|  |            |
|--|------------|
| Siting and Installation (6 visits – AQM to LP, SE)       | \$1,200.00 |
| Travel to 12 public meetings (Location to be determined) | \$600.00   |
| Maintenance and repair travel (estimated 3 visits)       | \$600.00   |

Travel to pick up and install filters (TRO to LP and SE) \$18,000.00

**Total \$20,400.00**

| <u>Personnel</u>            | Salary   | Fringe*  | Indirect     | Total              |
|-----------------------------|----------|----------|--------------|--------------------|
| Regional Operator           | 4,424.20 | 2,110.49 | 1,260.90     | \$7,795.59         |
| OAQM Microscopist           | 7,650.40 | 3,634.57 | 2,180.36     | \$13,465.34        |
| OAQM monitoring specialists | 3,786.95 | 1,802.83 | 1,079.28     | \$6,669.06         |
| OAQM Data personnel         | 5,507.71 | 2,628.30 | 1,569.70     | \$9,705.71         |
| OAQM Weighing Lab Support   | 3410.45  | 1,630.36 | 971.98       | \$6,012.79         |
| OAQM Management Support     | 7,536.74 | 3,589.86 | 2,147.97     | \$13,274.57        |
|                             |          |          | <b>Total</b> | <b>\$56,923.06</b> |

\*The fringe rate range used here is 47% - 48%. Fringe components are retirement benefits, Social Security, Medicare, Group Life, Health Care, VSDP and Long Term Disability

#### **F. Expenditure of Awarded Grant Funds**

Funds supporting this Project as delineated in the above budget will be expended throughout the life of the project. OAQM will submit project reports on a semi-annual basis documenting the project expenditures on an ongoing basis. The proposed expenditure schedule, consistent with Table 2 below, will proceed as follows:

| <u>Milestones</u> | <u>Project Activities</u>   | <u>Expenditures</u> |
|-------------------|---|---------------------|
| Year 1 Q1         | Meetings with both Communities, Sampler purchase, Trailer Preparation, Initial Power installation, fencing where needed, Utility connections, personnel costs. OAQM personnel | 88,655.81           |
| Year 1 Q2         | Installation completion, Samplers and sensors purchased, supplies purchased, portion of filters purchased, Local approvals, Utility connections, OAQM personnel cost          | 134,679.18          |
| Year 1 Q3         | Data loggers, additional supplies, public meeting, site rental, Sample analysis, finalized siting and utility connections, OAQM and DCLS personnel costs                      | 57,297.31           |
| Year 1 Q4         | Final T640X costs, Filters, electrical operational costs, Sample analysis, ongoing personnel costs  | 130,869.84          |
| Year 2 Q1         | Ongoing consumables costs, public meetings, property rental costs, personnel costs  | 40,161.84           |
| Year 2 Q2         | Ongoing consumables, supply replenishment, ongoing electrical and analytical costs, personnel   | 39,378.51           |
| Year 2 Q3         | Ongoing consumables, public meetings, supply replenishment, ongoing electrical and analytical costs, personnel  | 41,963.05           |
| Year 2 Q4         | Electrical and analytical costs, OAQM, DCLS and VDH personnel costs.  | 38,274.05           |
| Year 3 Q1         | Public Meeting, Electrical and analytical costs, ongoing personnel costs  | 36,041.05           |
| Year 3 Q2         | Electrical and analytical costs, ongoing personnel costs  | 35,810.94           |
| Year 3 Q3         | Public Meeting, Electrical and analytical costs, ongoing personnel costs  | 11,992.64           |
| Year 3 Q4         | Electrical Costs, Personnel costs associated with project close out   | 3,131.29            |

Table 2: Expenditure of Awarded Grant Funds

| Task   | Year 1 |    |    |    | Year 2 |    |    |    | Year 3 |    |    |    |
|--|--------|----|----|----|--------|----|----|----|--------|----|----|----|
|  | Q1     | Q2 | Q3 | Q4 | Q1     | Q2 | Q3 | Q4 | Q1     | Q2 | Q3 | Q4 |
| Evaluate sampler network                         |        |    |    |    |        |    |    |    |        |    |    |    |
| Purchase samplers                                |        |    |    |    |        |    |    |    |        |    |    |    |
| Research and select sensors                      |        |    |    |    |        |    |    |    |        |    |    |    |
| Purchase sensors                                 |        |    |    |    |        |    |    |    |        |    |    |    |
| Site samplers and sensors                        |        |    |    |    |        |    |    |    |        |    |    |    |
| Purchase T640X monitors                          |        |    |    |    |        |    |    |    |        |    |    |    |
| Site T640X monitors                              |        |    |    |    |        |    |    |    |        |    |    |    |
| Sample collection using the samplers and sensors |        |    |    |    |        |    |    |    |        |    |    |    |
| Analysis of samples                              |        |    |    |    |        |    |    |    |        |    |    |    |
| Monitor air using T640X                          |        |    |    |    |        |    |    |    |        |    |    |    |
| Data validation and summary                      |        |    |    |    |        |    |    |    |        |    |    |    |
| Health risk assessments                          |        |    |    |    |        |    |    |    |        |    |    |    |
| Final reports preparation                        |        |    |    |    |        |    |    |    |        |    |    |    |

### G. Leveraging

OAQM will use the existing intern program in Tidewater. The interns are provided for the air monitoring program in DEQ's TRO through an MOU with the stated objective to support and promote interns, career development and employment in the Environmental Science, Engineering and related fields. Including the interns in this project will support the above objective and provide a means to ensure sufficient resources to perform the routine operation of the monitors. The current intern program is budgeted at \$19,000 dollars per year for a total leveraged support of \$38,000 for the two years of projected sample collection.

DEQ's Division of Communications has worked with DEQ's Tidewater Regional Office and with OAQM to address the concerns expressed by both the LP and SE communities. DEQ generally views this project as a means to address community concerns and to develop long term engagement processes with the affected communities. This project has a significant structural community involvement process and is intended to maintain air quality data communication and community interaction after completion of the project. DEQ will act to organize, facilitate, and document the public meetings and other interactions through the Division of Communications and will leverage these efforts as part of this project.

### H. Community Benefits, Engagement, and Partnerships

The EJSCREEN standard report run for both the LP and SE communities provides the demographic information shown in Table 3 below. Both communities have significant low income and minority populations, and have a history of registered complaints relative to coal dust in their communities. Past PM10 studies have not indicated an issue relative to the ambient air quality standards, however no studies have been directed at investigating air toxics and the potential impact on these communities. By conducting this project, DEQ, their partners and stakeholders establish a working relationship with community members to address their concerns. This project is intended to include significant community involvement, which will include assisting DEQ with siting monitors, conducting at least six meetings with each group to build community understanding of air quality issues, promoting community engagement through ongoing written updates, and including each group in the review process for the final reports of

this study. DEQ Division of Communications will work with the respective communities to determine their desired methods of engagement, and may convene a stakeholder advisory group for continued engagement on and following this study. Engagement will constitute a minimum of six meetings with each community that will provide environmental education on topics such as what air pollution is, how it is regulated and measured, and what a health risk assessment means. At each meeting, attendees will be asked to complete pre- and post-meeting evaluation forms to guide meeting planning. Through these meetings, DEQ hopes to complete additional educational materials such as fact sheets that DEQ and project partners can share with other interested stakeholders.

Table 3: EJSCREEN standard report output for Southeast Community and Lambert's Point

|   | Value | State |       | EPA Region |       | USA  |       |
|---|-------|-------|-------|------------|-------|------|-------|
|   |       | Avg.  | %tile | Avg.       | %tile | Avg. | %tile |
| <u>Southeast Community Newport News</u> |       |       |       |            |       |      |       |
| Demographic Index                       | 67%   | 32%   | 95    | 30%        | 92    | 36%  | 87    |
| Minority Population                     | 83%   | 37%   | 93    | 32%        | 89    | 39%  | 85    |
| Low Income Population                   | 53%   | 26%   | 90    | 28%        | 88    | 33%  | 81    |
| <u>Lambert's Point Norfolk</u>          |       |       |       |            |       |      |       |
| Demographic Index                       | 54%   | 32%   | 86    | 30%        | 84    | 36%  | 77    |
| Minority Population                     | 47%   | 37%   | 66    | 32%        | 72    | 39%  | 64    |
| Low Income Population                   | 54%   | 26%   | 91    | 28%        | 89    | 33%  | 82    |

DEQ will evaluate each monitoring site to determine if the site will remain within the network after the study is complete. By establishing a community sensor network, DEQ expects to continue engagement opportunities with these communities, and to provide them with opportunities to shape how DEQ might be able to use information from low cost sensors and further engage with other communities.

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